IPW

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

APPLICANT: Martin BURGBACHER ATT. DOCKET: 8703-172

SERIAL NO. 10/ 797,518

FILED: 9 MAR. 2004

FOR: POLYPHASE ELECTRIC MOTOR

ELECTION, WITH TRAVERSE

4 OCT. 2005

COMMISSIONER FOR PATENTS
PO BOX 1450
ALEXANDRIA VA 22313-1450

Sir:

In response to the Restriction Requirement of 7 SEP. 2005, Applicant ELECTS:

GROUP I, claims 1-13.

TRAVERSE

The Office has clearly **misunderstood** claim 14 and its dependent claims 15-19; contrary to paragraph 1 of the Office Action, they are not "drawn to the method of making a motor, classified in class 29, subclass 596." Rather, claims 14-19 are drawn to a method of operating an already-manufactured motor. The preamble of claim 14 reads, in pertinent part: "A method of influencing the shape of the induced voltage of an electronically commutated motor having a rotor and several pole shoes" and the "characterizing clause" begins "comprising the step of injecting an additional magnetic flux . . ."

CERTIFICATE OF MAILING

I hereby certify that this document is being deposited with the United States Postal Service as first class mail, postage prepaid, under 37 C.F.R. 1.8 on **4 OCT. 2005** and is addressed to the Commissioner for Patents, P.O. Box 1450 Alexandria VA 22313-1450.

Dorothy Tomasco

Dorothy Tomasco

F:\WP51\MMO\AMEND\8703-172.XTL

Injecting magnetic flux is not a manufacturing step, but rather the application of a magnetic field. Please refer to the enclosed page 361 of the IEEE Standard Dictionary; it appears that the Office has confused definition 2 with definition 1 (which applies to the recited "magnetic flux").

The class definition for class 29, subclass 596 reads: "This subclass is indented under subclass 592.1. Process for making a device which will convert mechanical energy to electrical energy or vice versa, by employing electromagnetism."

Claims 14-19 are not directed to making a device.

Independent claim 14 is directed to improving the form (voltage trace with respect to time) of the induced voltage in an electronically commutated motor (ECM, for short).

It is well known that the induced voltage affects the form of the torque generated in an electric motor. For example, when one applies a square-wave induced voltage and a constant current, one obtains a constant torque. However, in many motors, one wants a sinusoidal current and a sinusoidal induced voltage, in order to achieve a smooth and substantially constant torque. This becomes important when the motor is used in a servo-mechanism, such as automotive power steering, where any irregularity in the torque would be directly felt by the driver or other user of the motor-containing device.

An "induced voltage" only arises during operation of a motor. **FIG. 13** of the present application shows a (prior art) irregular induced voltage, which results in a poor torque. In particular, the fifth harmonic is very high, as mentioned at specification page 15, middle paragraph.

FIG. 19 shows the **improved** induced voltage obtainable

using the present invention, as described on page 18. Compared to the curve shown in FIGS. 13-14, the fifth harmonic is reduced by 86%, which is a substantial improvement.

As shown in FIG. 16, this improvement is achieved by injecting an additional magnetic flux to a target zone 270'" adjacent the air gap. This flux (flow of magnetic energy) comes from the nearby permanent magnet 262A, and is directed to the target zone by way of a bridge 274' and crosses a zone 266A' of lower magnetic conductivity. This zone 266A' consists generally of air, which has a low magnetic conductivity.

The curved magnetic flux lines shown in FIG. 17 show the manner in which this "additional magnetic flux" is "injected" into the target zones.

CONCLUSION

The foregoing explanation has demonstrated that claims 14-19 are not drawing to a method of making an electric motor, but rather to a method of causing the voltage induced during motor operation to have a more desirable form or characteristic curve. This method has absolutely nothing to do with class 29, subclass 596. The claimed method is particularly adapted to be carried out in a motor having the structure shown in FIGS. 10-14. An advantage of the method recited in claim 14 is that it can be performed without increasing the cost of the motor shown in FIGS. 10-14.

Japanese patent application 5-236 687, submitted with the IDS filed simultaneously herewith, does not suggest the present invention, because the OYAMA & YAMAGIWA Japanese document explicitly says that the magnetic flux is formed "by the rotor core" whereas, by contrast, the magnetic flux shape is also

influenced by the injection of additional flux into target zones 270"'. The Japanese abstract thus teaches away from the present invention.

The Examiner is requested to withdraw the Restriction Requirement, and to consider all of claims 1-19.

ENVIRONMENTAL QUALITY BENEFITS

Prompt handling of the present application is requested because the invention contributes to better environmental qualify, as set forth at MPEP section 708.02, Paragraph V. Specifically, a preferred use of the motor of the present invention is for automotive power steering, in place of prior art hydraulic servo-linkages which continuously expend energy, whether or not the driver is currently moving the steering wheel. A power steering system employing the present invention draws power only when the steering wheel is actually being turned. Thus, the present invention **reduces gasoline consumption**, an important consideration in the aftermath of the refinery damage done by hurricanes Katrina and Rita in 2005.

Respectfully submitted,

Milton Oliver

Milton Oliver, Reg. # 28,333
TEL: 203-261-1234
FAX: 203-261-5676